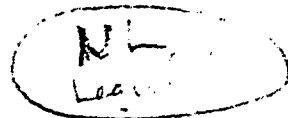


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EXECUTIVE SUMMARY



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1 Introduction

This report is issued by a Committee of the Health Council of the Netherlands at the request of the Dutch government.

In order to ascertain whether environmental tobacco smoke is harmful to health, the Committee has evaluated the most important articles published prior to June 1990. It has also consulted two important American reports (USS86, NRC86). The Committee outlines its report below.

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2 Evaluation of the results of epidemiological research

To evaluate the effect of exposure to environmental tobacco smoke one has to rely mainly on results of epidemiological research carried out among nonsmokers. This kind of research is beset by methodological problems which may distort the outcome. Distortion may be due to the following factors:

- the use of inaccurate measures of exposure and effect
- biased composition of the research groups to be compared (selection bias)
- bias of participants or researchers in reporting or compiling data (information bias)
- selective publication in scientific journals of results which indicate an effect (publication bias)
- the involvement of factors other than tobacco smoke (confounding factors).

The Committee examined the extent to which the published data might be distorted by any of the above factors. It used the

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following criteria to assess whether exposure to tobacco smoke was a causal factor of the health effects found among nonsmokers:

- consistency of the results of various studies
- the magnitude of the increase in health risk as a consequence of tobacco smoke (the greater the increase, the greater the significance)
- the presence of a dose response relationship
- an appropriate time sequence of exposure and response (temporality)
- consistency with biological knowledge.

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3 Exposure of non-smokers to tobacco smoke

The tobacco smoke inhaled by a nonsmoker contains about 3,800 different substances. These include irritants, substances which can affect the nervous system, the respiratory tract, the immune system, blood and blood vessels and offspring, and also carcinogenic substances. The composition of directly inhaled smoke differs greatly from that of environmental tobacco smoke. Therefore the Committee considers it not possible to deduce from the health effects of active smoking to what extent exposure to environmental tobacco smoke causes effects in nonsmokers.

Exposure to tobacco smoke is widespread in the Netherlands. The Committee assumes that there are smokers in about six dwellings in every ten. In a survey carried out in 61 office buildings in the Netherlands, 41% of the nonsmokers questioned reported that tobacco was smoked in their immediate vicinity during working hours. Smoking considerably increases the indoor air concentrations of pollutants such as suspended particulate matter, nicotine, benzene, benzopyrene, nitrosamines and aldehydes.

In nonsmokers, traces of exposure to tobacco smoke are detectable in body fluids as certain substances, which include carcinogens and mutagens.

The Committee would point out that at present, occasional exposure to tobacco smoke is an inevitable concomitant

and people's social lives.

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42.02.10 Lung cancer

42.02.10 The Committee considers it likely that long-term exposure to tobacco smoke may increase the lung cancer risk of nonsmokers. This conclusion is based primarily on the results of a large number of surveys, in which the nonsmoking partners of smokers were found to have an increased lung cancer risk. By combining the various results, several authors have estimated that the increase in lung cancer risk might be between 10 and 60 percent. A number of studies have demonstrated a dose-response relationship.

The Committee considers an increase of the lung cancer risk to be biologically plausible since tobacco smoke contains substances which are carcinogenic in man and since the presence of tobacco smoke constituents or their metabolites has been demonstrated in the bodies of nonsmokers.

The Committee would emphasize that the apparent increase in the lung cancer risk could be partly due to flaws in the design of the epidemiological studies. As it is not known to what extent the results of the several studies are distorted, the Committee is of the opinion that quantitative estimation of the additional lung cancer risk of nonsmokers exposed to tobacco smoke is not possible at present.

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5 Other forms of cancer

On the basis of the epidemiological data currently available, the Committee cannot give an opinion as to whether exposure to tobacco smoke plays a part in the onset of cancer other than lung cancer in nonsmokers.

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6 Cardiovascular disease

The Committee does not expect short-term exposure to tobacco smoke to affect the circulation of healthy nonsmokers in normal circumstances. Nonsmokers with angina pectoris may occasionally experience symptoms in places with very high concentrations of tobacco smoke.

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The Committee believes that the currently available data preclude a firm conclusion as to whether exposure to tobacco smoke is a contributory factor in the onset of and mortality from cardiovascular disease in nonsmokers. Epidemiological research carried out among nonsmoking partners of smokers provides only weak indications. The results of the several studies may have been confounded by differences in lifestyle between nonsmokers with and without smoking partners. So far researchers have not been able to control these differences adequately.

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7 Effects on children

The Committee concludes that exposure to tobacco smoke at home may have an adverse effect on children's health. The children of smoking parents run an increased risk of respiratory and middle ear infections. They may suffer more severely and more frequently from asthma and other respiratory symptoms. Development of the respiratory tract during childhood may be disturbed to some extent. In view of the association between the occurrence of chronic obstructive lung disorders in later life and respiratory disorders during the early years, the Committee does not exclude the possibility of long-term effects arising in children as a result of exposure to tobacco smoke.

In the opinion of the Committee, there is no doubt that smoking during pregnancy is harmful to the unborn child. Children of smoking mothers weigh less and are shorter on average at birth. The perinatal mortality rate is also higher. Although harmful substances from environmental tobacco smoke can pass through the placenta, it is not yet clear whether this can adversely affect the unborn children of nonsmoking mothers who regularly inhale tobacco smoke during pregnancy.

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8 Effects on the respiratory tract in adults

The Committee concludes that people with a disposition to asthma may be particularly sensitive to environmental tobacco smoke. They will suffer respiratory symptoms more fre-

frequently at short-term exposure.

9.10 There are weak indications that adult nonsmokers who have been exposed for long periods to the tobacco smoke of smoking partners or colleagues experience respiratory symptoms more often than nonsmokers who are not similarly exposed. In addition, exposure has sometimes been found to cause a slight lung function decrease. The Committee believes that these indications do not yet permit a firm conclusion as to whether long-term exposure affects the respiratory tract. The effects found in surveyed groups of nonsmokers are small. It is not possible to ascertain whether these are the result of environmental tobacco smoke or other factors which have affected the respiratory tract, such as infections, illness, occupational circumstances or air pollution.

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9 Irritation and nuisance

Both smokers and nonsmokers may be bothered by tobacco smoke. People visiting smoke-filled places are at first overcome by the smell. This may be followed by irritation of the eyes and the mucous membranes of the nose, mouth and throat. Smell is the most sensitive nuisance indicator. The degree of ventilation needed to prevent nonsmokers from being hampered is much greater than that needed to avoid body odour nuisance. The latter serves as the general criterion for ventilation requirements.

The Committee believes that nuisance as a result of the smell and the irritating effects of tobacco smoke must be regarded as harmful to health. The continuous discomfort and the necessity to avoid public places constitute a fundamental assault upon a person's well-being.

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10 Summary from the health point of view

According to the health definitions laid down by the Health Council and the World Health Organization, it is not only the onset, aggravation or continuation of clinical symptoms or the reduction of life expectancy that are regarded as harmful to health. The extent to which the effects of ex-

posure to substances impinge on a person's ability to function normally is equally important (Gez77). In the opinion of the Committee, this principle also applies to exposure to tobacco smoke.

Short-term exposure to tobacco smoke can give rise to odour nuisance, irritation of the eyes and the mucous membranes of the eyes, nose, mouth and throat. It can also aggravate asthmatic symptoms. The Committee believes that such effects must be regarded as harmful to health in the light of the above principles. In the case of children, it takes the view that the effects of long-term exposure can be unequivocally regarded as harmful to health. The Committee also observes that the possibility of long-term exposure to tobacco smoke increasing the risk of lung cancer in nonsmokers cannot be excluded.

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